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Safety, Culture, Mindfulness and Safe Behaviour: Converging ideas

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Safety Culture, Mindfulness and Safe Behaviour: Converging ideas? [#]

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Jim Reason's book, *Managing the Risks of Organisational Accidents*,[1] is probably best known for its "Swiss cheese" model of how accidents occur, as well as for its distinction between active failures and latent conditions. Less well known is its penultimate chapter on safety culture, which is arguably the most useful discussion of this concept to have been published.

Safety culture is one of a number of ideas currently seen as having the potential to move organisations to higher standards of safety. A second concept which seems to spark interest whenever it is mentioned is mindfulness, advocated by Karl Weick and his associates. Safe behaviour is a third idea which very much in vogue. These three concepts are embedded in slightly different literatures, suggesting that they are more distinct than perhaps they are. The purpose of this paper is to discuss the way these ideas converge, and, in addition, to explore their limitations and tensions. The paper starts with an analysis of safety culture and then draws the connections with organisational mindfulness and safe behaviour strategies. The last section of the paper examines one distinctive safe behaviour strategy - the promotion of risk-awareness among employees.

SAFETY CULTURE

Major accidents can frequently be traced to failures in safety management systems[2]. Even when enormous effort has gone into perfecting these systems, it seems they remain fallible. It is largely for this reason that the concept of safety culture is now receiving widespread attention. This is not to say that systems are irrelevant, but rather that they will function better in organisations which have developed a culture of safety. Reason puts it slightly differently: the inherent limitations of safety systems may matter less if organisations can develop robust safety cultures .[3]

Do all organisations have a safety culture?

[#] Paper prepared for the Jim Reason Festschrift, an edited book of readings celebrating the work of a distinquished academic.

[1] Aldershot: Ashgate, 1997

[2] See eg B. Appleton, "Piper Alpha", pp174-84 in T. Kletz , *Learning form Accidents* (Oxford: Gulf, 1994)

[3] Reason, "Beyond the limitations of safety systems", *Australian Safety News*, April 2000.

A preliminary question that needs some consideration in this context is whether all organisations can be said to have a safety culture, or only some. Let us consider from this point of view the much quoted definition provided by the International Atomic Energy Agency:

> (Safety culture is) that assembly of characteristics and attitudes in organisations and individuals which establishes that as an over-riding priority … safety issues receive the attention warranted by their significance.[4]

It is clear that, according to this definition, by no means all organisations have a safety culture; only those for which safety is an over-riding priority. That is certainly Reason's position: "Like a state of grace, a safety culture is something that is striven for but rarely attained".[5] Hudson, too, suggests that only after an organisation has passed a certain stage of development in its focus on safety can it be said to have a safety culture.[6] In what follows I shall describe this as the restricted concept of safety culture.

The alternative usage is that all organisations can be said to have a safety culture, which may vary in its effectiveness. I call this the broad conception. On this view, safety cultures which have a strong focus on safety can be distinguished from those with a weaker focus by calling them positive, or full, or true, or strong safety cultures. A great deal of empirical research is premised on this idea that all organisations have a safety culture of sorts, the research objective being to assess, or measure, or investigate the extent to which an organisation's safety culture is indeed focussed on safety. Some researchers seem to have it both ways: they explicitly adopt the restricted definition but then implicitly proceed on the basis of the broad definition by carrying out research to determine the strength of an organisation's safety culture.

Part of the reason for this confusion is to do with language. As Hale points out,[7] "safety culture" has been treated as largely synonymous with "safety climate" in the empirical research literature. The two terms have been fighting for supremacy and the trend has been for "culture" to gain ground at the expense of "climate". However the two have different linguistic consequences. Talk of safety climate and safety climate surveys does not presuppose a climate *favourable* to safety. In contrast, the term safety culture does convey the idea of a culture focussed on safety. In short, the English language suggests a distinction between these two terms and to treat them as synonymous creates needless confusion.

Hale suggests that the confusion might be avoided by talking of the "cultural influences on safety",[8] which in no way pre-supposes a positive attitude to safety and invites empirical research on the extent to which a culture is indeed safety-focussed. One might suggest, further, that where a culture exhibits a strong emphasis on safety it be referred to as a "culture of safety", a relatively unambiguous term. Hale's view, however, is that the term "safety culture" is now so ingrained that there is no alternative but to continue using it and to cope with the confusion. My own view is that it can and should be

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4 Quoted in J Reason, 1997 *op cit*, p 194. The definition was formulated for nuclear power plants but it is obviously generalisable.

5 *Op cit*, p 220

6 P Hudson, "Safety culture – the way ahead? Theory and practical principles", unpublished paper, 1999 p2

7 A Hale, "Culture's confusions" (2000) 34 *Safety Science* 1, p 5

8 *Ibid*.

avoided, but since I am discussing an existing literature I continue using it here, reluctantly. Readers should understand, however, that I follow Reason and Hudson in using the term in its restricted sense, that is, my discussion will be about cultures of safety. I shall in fact use the terms "safety culture" and "culture of safety" interchangeably.

Is culture a characteristic of individuals or of groups?

Social scientists insist that culture in general and safety culture in particular is a characteristic of groups, not of individuals. Organisations may have multiple cultures and cultures may overlap and fragment into subcultures, but always one is discussing the characteristics of a group or subgroup, not an individual. Nevertheless there is a tendency in management circles to slip into seeing culture as an individual level phenomenon.

Consider the following statements from the safety advisor to Esso Australia, made prior to the explosion at Esso's Longford gas plant in 1998.

> Safety performance has been achieved through an unwavering commitment and dedication from all levels in the organisation to create a safety culture which is genuinely accepted by employees and contractors as one of their *primary core personal values*. [9] (emphasis added)

The aim, he said, is to "create a *mindset* that no level of injury (not even first aid) is acceptable"[10] (emphasis added).

Esso draws an interesting implication from this. Since safety is about a mindset, it is something which the individual must cultivate 24 hours a day. It cannot be exclusively about occupational safety but must include safety in the home. Hence Esso's 24 hour safety program. This is how Esso's safety advisor expressed it:

> Real commitment to safety can't be 'turned on' at the entrance gate at the start of the day and left behind at the gate on the way home. Safety and well-being of fellow employees is extended beyond the workplace at Esso. A true commitment to safe behaviour is developed by promoting safety as a full time (i.e. 24 hour) effort both on and off the job.[11]

What is interesting about this formulation is that it sees culture as a matter of *individual* attitudes - attitudes which can be cultivated at work, but which in the final analysis are characteristics of individuals, not the organisations to which they belong. As such, the individual can take these attitudes from one context to another, from work to home, for example. This view of culture is widespread in the business world.[12]

It needs to be pointed out, however, that culture as mindset tends to ignore the latent conditions which underlie every workplace accident, highlighting instead workers'

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9 Smith, quoted in A Hopkins, *Lessons from Longford* (Sydney: CCH, 2000), p 74

10 *ibid*.

11 *ibid.*

12 See the trenchant critique by Y Berger, "Why hasn't it changed on the shopfloor?", in C Mayhew & C Peterson (eds), *Occupational Health and Safety in Australia*, (Sydney: Allen & Unwin, 1999), pp 52-64

attitudes as the cause of accidents. If, for example, someone falls down a flight of steps, the idea of safety culture as mindset attributes this accident to worker carelessness - perhaps the failure to use the hand rail - and ignores the possible contribution of staircase design to the accident.

Moreover, creating the right mindset among frontline workers is not a strategy which can be effective in dealing with hazards about which those workers have no knowledge and which can only be identified and controlled by management, using systematic hazard identification procedures. It is *management* culture rather than the culture of the workforce in general which is most relevant here. If culture is understood as mindset, what is required is a *management* mindset that every major hazard will be identified and controlled and a *management* commitment to make available whatever resources are necessary to ensure that the workplace is safe.

The content of culture

The Esso statements above make two assumptions about culture. The first, already dealt with, is that culture is essentially an individual level phenomenon. The second is that culture is made up of *attitudes or values*. This second assumption will be examined critically in what follows.

Schein[13] provides a useful summary of what various writers have meant by culture: observed behavioural regularities, group norms, espoused values, formal philosophy, rules of the game, climate, embedded skills, habits of thinking, shared meanings, root metaphors. Some of these usages focus on values, in the way that the Esso statement does, but others stress behaviour as the key element of culture. Of course, since behaviour is informed by values there is no actual conflict between usages; it is simply a question of emphasis.

At times, Schein himself has emphasised the behavioural element in culture, by defining it as "the way we do things around here".[14] He has, in short, viewed the culture of an organization as its collective practices. More recently he has modified his formal definition so that it does not include behaviour patterns overtly but refers instead to "shared basic assumptions".[15] He does so on the grounds that not all behavioural regularities are determined by ideas and values; some behaviour may be based on biologically determined reactions, for example. But while not all behaviour patterns are based on shared values, shared values undoubtedly give rise to patterns of behaviour, and it is the job of the cultural analyst to identify the connections between values and behaviour. Notice that "the way we do things around here" carries with it the connotation that this is the *right,* or *appropriate* or *accepted* way to do things. Such a view stems necessarily from "shared basic assumptions". It is clear, therefore, that Schein is not repudiating his earlier definition of culture in terms of collective practices, merely refining it.

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13 E Schein, *Organisational Culture and Leadership*, 2nd ed, (San Francisco: Jossey-Bass, 1992), pp 8-9.

14 *op cit* p 9.

15 "The culture of a group can now be defined as a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." p12

Reason adopts this view of culture as collective practices and argues that it is more useful than the idea of culture as values. It is more useful because it provides a practical way to bring about culture change. Practices can be directly affected by management while values can not. Quoting Hofstede, he writes:

> Changing collective values of adult people in an intended direction is extremely difficult, if not impossible. Values do change, but not according to someone's master plan. Collective practices, however, depend on organisational characteristics like structures and systems, and can be influenced in more or less predictable ways by changing these.[16]

An example will make the point. Suppose a university is concerned about sexual harassment and wishes to change the culture with respect to such behaviour. It may decide to try to change values directly by putting up posters condemning sexual harassment and urging people to think differently about it. By itself, this is likely to be an ineffective strategy, in part because those whose behaviour is perceived by others as harassing may not themselves perceive it as such. Moreover, if victims of sexual harassment are discouraged from complaining by procedures designed to protect alleged perpetrators from unfair accusations, one can confidently predict that the attempt to change values in this matter will be a failure. If on the other hand the university develops *practices* that facilitate complainants and effectively convey to those about whom complaints are made that their behaviour is unacceptable, one can expect real culture change.

An organisation which focuses its efforts on changing practices is not of course turning its back on value change. Psychology teaches us that human beings feel tension when their behaviour is out of alignment with their values. Such a condition is known as cognitive dissonance.[17] There is consequently a tendency to bring the two into alignment. If the behaviour is effectively determined by the organisation then the individual's values will shift accordingly. Thus, if an organisation constrains the individual to behave safely, the individual will begin to value safe behaviour more highly. Focussing on practices, therefore, is a not a superficial strategy which leaves the more deep-seated aspects of a culture untouched. Changing practices will in the end change values and assumptions as well.

Notice that the idea of culture as collective practices reinforces the idea that culture is specific to a group or organisation, since the practices in one organisation are unlikely to be relevant in their entirety to another. In particular, work practices may be largely inapplicable at home, rendering problematic any idea of a 24 hour safety culture.

The content of a culture of safety

The previous discussion suggests one way in which the content of a culture of safety might be specified. An organisation might be said to have a culture of safety if the practice of its employees is to comply with safety requirements. This is a relatively limited conception, a point I shall develop later. Reason advocates a far richer conception; for him, a culture of safety is equivalent to an informed culture.[18]

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16 Reason, 1997, *op cit* p 194.

17 A. Kahn, *Social Psychology* (Dubuque: Brown, 1984) pp 115ff.

18 The following is from Reason, 1997 *op cit* chap 9.

The crucial feature of an informed culture is that it is a reporting culture, one in which people are prepared to report their errors and near-misses. The issue is not whether the organisation has a reporting system; it is whether, *as a matter of practice*, errors and near misses are reported.

A reporting culture depends, in turn, on how the organisation handles blame and punishment. If blame is the routine response to error, then reports will not be forthcoming. If, on the other hand, blame is reserved for truly egregious behaviour, involving recklessness or malice, reporting in general will not be discouraged. Rather than a blanket no-blame approach, what is required, Reason argues, is a just culture.

Reports are only effective if an organisation learns from them. A third feature of a culture of safety, therefore, is that it be a learning culture.

Finally, a culture of safety is flexible, in the sense that decision-making processes vary, depending on the urgency of the decision and the expertise of the people involved. This point will be developed further in the discussion of mindfulness.

In summary, Reason identifies four features of a culture of safety: it is a reporting culture, a just culture, a learning culture and a flexible culture. Notice that these features all concern practices. Furthermore they are organisational or collective practices. This is far cry from the concept of safety as "mindset" or "core personal values", discussed earlier.

Notice, too, that the focus on organisational practices places the responsibility for a culture of safety squarely on senior management, for it is the leaders who determine how the organisation functions and it is their decision-making which determines whether an organisation exhibits the practices which go to make up a culture of safety. Schein echoes this point in his more general discussion of organisational culture. Leaders create cultures, he says, by "what they systemically pay attention to. This can mean anything from what they notice and comment on to what they measure, control, reward and in others ways *systematically deal with*"[19] (emphasis in original). This statement not only illustrates Schein's views on the role of leadership, but it is yet another statement that it is what people *do* that is the key to culture.

COLLECTIVE MINDFULNESS

The second approach to these issues comes from research on what are called high reliability organisations (HROs), such as nuclear power stations, which appear to function with remarkable reliability despite the inherent risks. Carl Weick and his associates argue that what characterises these organisations is their "collective mindfulness" of danger. Weick introduced the term into the safety literature in an article in 1999 entitled, "Organising for high reliability: processes of collective mindfulness".[20] He takes the term "mindfulness" from Langer, who uses it to describe the mental state of individuals, but Weick's innovation is to transfer this idea to the organisational

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19 *Op cit* p 231

20 K Weick, K Sutcliff & D Obstfeld , "Organising for high reliability: processes of collective mindfulness", *Research in Organisational Behaviour*, 21, pp 81-123

context. He describes his thinking as an "extension of (Langer's) model to the group level".[21]

Because mindfulness is normally thought of as an individual level phenomenon, it is important to emphasise that Weick sees collective mindfulness as a characteristic of organisations. Consider for instance the following comment. HROs "organise themselves in such a way that they are better able to notice the unexpected in the making and halt its development".[22] This is first and foremost a statement about style of organisation, not about the mental state of individuals.

The term collective mindfulness is potentially confusing. It can easily be understood as referring to a group whose members are all individually mindful. In my experience this is what employers assume when they are introduced to the idea and it is this which sparks their interest. A company whose employees were all individually mindful of risks would be a dream come true for many employers.

Of course, mindful organisations will generate mindful individuals. Furthermore, mindfulness at the individual level is arguably the ultimate goal. Weick at times talks about mindful organisations as ones where "people begin to expect mindfulness from one another".[23] But his fundamental point is that individuals will only be mindful if there are processes of mindfulness at the organisational level.

There are clear parallels here with safety culture. First, while employers tend to focus at the level of the individual and would love to be able to inculcate safety awareness or mindfulness directly into the consciousness of their workforces, the theorists of both safety culture and collective mindfulness insist that these are group level phenomena.

A second point of convergence between the two ideas is their focus on practices. According to Weick,

> (Mindfulness) is as much about what people do with what they notice as it is about the activity of noticing itself…..
> Mindfulness in HROs is distinctive because it is closely related to the repertoire of action capabilities.[24]

Reason and others make a precisely analogous point when they argue that practices rather than values are the focal point of safety culture.

The processes of mindful organising

Weick et al identify five processes of mindfulness. I shall outline them here and identify similarities with Reason's formulation of the culture of safety.

1. *Preoccupation with failure*

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21 *Op cit* p 90

22 K Weick & K Sutcliffe, *Managing the Unexpected: Assuring High Performance in an Age of Complexity*, (San Francisco: Jossey-Bass, 2001), p 3.

23 Weick et al, 2001, *op cit*, p 120.

24 Weick et al, 1999, *op cit*, p 90.

Mindful organisations understand that long periods of success breed complacency and they are therefore wary of success. They are preoccupied with the possibility of failure. They hunt for lapses, errors and incongruencies, recognising that these may be the precursors to larger failures. They therefore have well developed systems for reporting near misses, process upsets and small and localised failures of all sorts. In short, in Reason's terms they have well developed reporting cultures.

2. *Reluctance to simplify*

All organisations must simplify the data which confront them in order to make decisions and move forward. Simplification means discarding some information as unimportant or irrelevant. But this is inherently dangerous, for the discarded information may be the very information necessary to avert disaster. "Simplifications increase the likelihood of eventual surprise".[25] Mindful organisations are therefore reluctant to discard information. "They position themselves to see as much as possible".[26] They socialise their workforces to notice more and they employ more people whose job is to explore complexity and to double check on claims of competency and of success. Cost cutting organisations regard such people as redundant and work on the assumption that redundancy is the enemy of efficiency. Mindful organisations treat redundancy as vital for the collection and interpretation of information which is necessary to avert disaster.

The reluctance to simplify does not correspond precisely to one of the four features of a culture of safety identified by Reason. But it is clear that it is implied in his overall conception of a culture of safety as an informed culture. An organisation can only be adequately informed if it resists the temptation to discard and ignore information, that is, if it is reluctant to simplify.

3. *Sensitivity to operations.*

A crucial feature of mindful organisations is that their front line operators strive to maintain situational awareness, or sensitivity to operations, that is, they strive to remain as aware as possible of the current state of operations. Moreover, they strive to understand the implications of the present situation for future functioning. All this presupposes front line operators who are highly informed about operations as a whole, about how operations can fail and about strategies for recovery. Again, while this does not correspond precisely to one of Reason's four elements, it is implied in his notion of an informed culture.

It is not only front line operators who must be sensitive to operations. Mangers must be sensitive to the experience of their front line operators, in particular by encouraging them to report on their experiences. Weick notes that "people who refuse to speak up out of fear enact a system that knows less than it needs to know remain effective"[27]. This is precisely the point which Reason makes in talking about the importance of a no-blame culture, or more accurately, a just culture.

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25 *Op cit* p 94.

26 Weick et al, 2001, *op cit*, p 11.

27 Weick et al, 2001, *op cit*, p 13.

4 & 5. *Commitment to Resilience and Deference to Expertise*

The last two features of mindful organising I deal with together, for reasons which will become apparent in a moment.

According to Weick, mindful organisations show a commitment to resilience, by which he means that they are not disabled by errors or crises but mobilise themselves in special ways when these events occur, in order to deal with them. For example, "knowledgeable people self-organise into ad hoc networks to provide expert problem solving. These networks, which have no formal status, dissolve as soon as normalcy returns".[28] Thus, air traffic controllers, at times of peak activity may group themselves around a single screen to give advice and backup to the controller in the hot seat.

Related to this is the deference to expertise. When operations are being carried out at very high tempo, decisions "migrate" to the people with the greatest expertise or knowledge about the events in question. These people may be relatively low in the hierarchy, but at such times, more senior managers will defer to their expertise. Researchers have identified this as a consistent pattern in flight operations on aircraft carriers, for example. When the tempo returns to normal, authority moves back up the hierarchy.

Reason's notion of a culture of safety as a flexible culture is intended to refer to both these ideas. A flexible culture, he says, allows ad hoc decision making groups to deal with crisis situations and involves a deference to expertise at whatever level in the organisation it may be located. Reason and Weick draw on the same research findings on high reliability organisations in their respective discussions and Reason even quotes some of Weick's earlier work in developing his concept of flexible cultures,[29] so it is not surprising that their concepts converge in the way they do.

Summary to this point

Organisational mindfulness is a concept which excites interest, and deservedly so. It promises a radically new way of moving organisations to a higher stage of safety. However, the analysis presented here demonstrates that it is not as dramatic a departure from Reason's version of the culture of safety as might at first appear. Weick himself acknowledges the close connections. He suggests that

> the concept of safety culture illuminates what it means to create a culture of mindfulness… Our interest in safety cultures stems (in part) … from their concern with mindfulness.[30]

Both concepts refer, in the first instance, to organisational not individual level characteristics and both are concerned, in the first instance, with behaviour rather than values. Finally, both authors recognize that the state they advocate is rare, and it is probably fair to say that both concepts are ideals against which real organizations can be measured, rather than descriptions which apply in their entirety to any organization.

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28 Weick et al, 1999, *op cit*, p 100.
29 Reason, 1997, *op cit* pp 216-7.
30 Weick et al, 2001, *op cit* p127.

SAFE BEHAVIOUR

The third approach to be discussed here is the use of behaviour modification strategies to promote safe behaviour. The most common "programmes require front line staff to carry out behavioural safety observations on their colleagues" and feed the results back on a one-to-one basis.[31] The feedback process requires sensitivity and observers need to be trained to do this effectively. An interesting variation of this approach does not require the observer to give one-to-one feedback: a single observer counts the number of instances of the behaviour in question, for example cases of workers not wearing hearing protection, and reports the statistics. If observations are done at regular intervals trend data can be prepared and the mere fact of measuring and reporting on the behaviour is often enough to generate improvement.[32]

The popularity of the behaviour modification approach stems from the widely held view that "human factors" contribute to the great majority of accidents. A conclusion which is frequently drawn from this observation is that the focus of accident prevention efforts needs to be shifted from engineering solutions to ensuring compliance with safe work practices. As the general manager of DuPont Australia once said,

> Both government safety organisations and unions are quite simplistic on safety. They focus on equipment, not on the acts of people. In our experience, 95 per cent of accidents occur because of the acts of people. They do something they're not supposed to do and are trained not to do, but they do it anyway. Changing this behaviour is much harder than focussing on equipment. When you've done the technical things you've only just started. That's just the tip of the iceberg of safety management.[33]

This is the basis of the famous DuPont approach. Those responsible for developing the DuPont system assert strenuously that it is far more than a simple behaviour modification system, but its emphasis is undeniably on behaviour modification and that is how it is understood by many of its advocates as well as its critics.

Supporters of the DuPont system point out that behaviour modification does indeed reduce accident rates. Critics claim that focussing on behavioural change diverts attention for the deeper causes of accidents - unsafe working conditions. They note, moreover, that the behavioural approach is relatively ineffective when it comes to occupational health and environmental issues.

This is not the place for a comprehensive evaluation of behaviour-based strategies in general or the DuPont system in particular[34]. My purpose here is to highlight the relationship between behaviour modification and culture change. Attempts to change behaviour are attempts to change "the way we do things around here"; *ipso facto* they are attempts to change the culture of the organisation. Flemming and Lardner allude to this in their comprehensive account of behaviour-based systems:

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31 M Flemming & R Lardner "Strategies to promote safe behaviour as part of health and safety management systems", contract research report 430/2002 for the UK Health and Safety Executive, p 10.

32 J Whiting, "On safe behaviour", (1993) 64 *Australian Safety News* 7, pp 43-5.

33 Interview with the author. The flaws in such thinking will be addressed later.

34 A useful discussion of the DuPont system can be found in R Wokutch and C VanSandt, "OHS management in the US and Japan" pp 367-390 in K Frick et al, *Systematic Occupational Health and Safety Management*, (Oxford: Pergamon, 2000).

> Promoting safe behaviour at work is a critical part of the management of health and safety, because behaviour turns systems and procedures into reality. On their own, good systems do not ensure successful health and safety management, as the level of success is determined by how organisations 'live' their systems.[35]

This paragraph echoes the hopes discussed earlier that cultures of safety offer a way to overcome the limitations of safety systems.

Flemming and Lardner point out that behaviour modifications programs often fail to achieve their full potential by focussing exclusively on the behaviour of front line staff. They argue that the behaviour of management is highly relevant to safety, two critical behaviours being:

- Meeting with employees frequently to discuss safety issues
- Responding quickly to safety suggestions and concerns raised by employees.[36]

They go on to suggest ways in which such behaviour can be observed and measured.[37]

Again, the connection to culture is obvious. As discussed earlier, the behaviour of leaders is the crucial determinant of the culture of an organisation. If the behaviour of leaders can be modified to ensure that they attend systematically to safety, the culture of the whole organisation is transformed.

Thus, behaviour modification, understood as including the behaviour of managers, is closely connected with culture change. It is not only a powerful tool for achieving culture change, but more than this, since culture refers to patterns of behaviour, modifying behaviour in an organisational context by definition modifies culture.

Safe behaviour programs will not, however, generate a culture of safety in the fullest sense. This is because the aim of most behaviour modification programs is to identify behaviour which is not in accord with safe working procedures, and to bring it into compliance. Yet a culture of safety is more than a culture of compliance – it is, if we follow Reason, an informed culture. To be fully informed, an organisation must not only identify and rectify non-compliance, it should identify the reasons for non-compliance, for if these are not attended to any behaviour change achieved in the short term will not be long lasting. As Flemming and Lardner put it,

> Whilst a focus on changing unsafe behaviour into safe behaviour is appropriate, this should not deflect attention from analysing why people behave unsafely. To focus solely on changing individual behaviour without considering necessary changes to how people are organised, managed, motivated, rewarded and their physical work environment, tools and equipment can result in treating the symptoms only, without addressing the root causes of unsafe behaviour.[38]

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35 *Op cit*, p 1.
36 *Op cit*, p 22.
37 *Op cit*, p 27.
38 *Op cit*, abstract.

Moreover the procedures themselves are often not optimal. A recent survey of oil and gas industry employees in Australia found that two thirds of them believed "the procedures do not always describe the safest way of working".[39] An informed culture will tend to identify and corrects defective procedures, while a culture which emphasises compliance will tend not to.

Finally some accidents have nothing to do with unsafe behaviour and are a direct consequence of latent conditions.[40] An organisation which has mechanisms to inform itself will identify these failures; an organisation which focuses on correcting unsafe behaviour will not.

To summarise, behaviour modification generally aims to produce a culture of compliance. This is a culture of safety only in a very limited sense. In Reason's work, the culture of safety is a far richer concept, lying beyond the reach of conventional behaviour modification techniques.

A variant of safe behaviour: risk-awareness

There is one variant of the safe behaviour strategy which is sufficiently distinctive to warrant a separate discussion, namely the promotion of risk-awareness within the workforce.

Most organisations rely heavily on rules and procedures for the control of hazards. Quite apart from the issue of whether or not employee behaviour is in compliance there are fundamental problems with any hazard control strategy which relies on compliance with procedures. Accident investigations frequently reveal that employees did not know what the appropriate rules were and even that there were no rules appropriate to the particular circumstances. The issue was highlighted by the train crash at Glenbrook near Sydney in 1999 in which seven lives were lost.[41] The inquiry found that the railways relied primarily on rules to assure safety. Furthermore the rules seemed never to be complete, for every time an accident occurred the authorities promulgated a new rule designed to prevent a recurrence of that particular incident. The result was a rulebook of thousands of pages which no one fully comprehended. The inquiry recommended that the authorities reduce their reliance on rules and seek to inculcate risk-awareness directly into their employees. Then, if employees were unaware of the rules, or it turned out that there were no applicable rules, they would be able to work out for themselves the safest course of action.

Many companies are seeking to inculcate risk-awareness into their employees. Esso, for example, has a "step back five by five" program. The idea is that before starting a new job, the employee should take five steps back, metaphorically, and take five minutes to think about what might go wrong and how this might be avoided.

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39 B. Safari, *The Human Factor: A benchmark of worker attitude to health, safety and the environment in the Australian oil and gas industry, 1999-2001*, Report to the National Oil and Gas Safety Advisory Committee, National Institute of Labour Studies, Flinders University, 2001, p 36.

40 Reason, 1997, *op cit*, p 18.

41 P McInerney, *Final Report of the Special Commission of Inquiry into the Glenbrook Rail Accident*, Sydney: NSW Government, 2001.

Another simple risk-awareness exercise which employees can be asked to carry out is to identify three ways in which things might go wrong and steps which will be taken to ensure that these unwanted outcomes do not occur. This practice has been recommended to air force pilots doing risk assessments prior to sorties.[42]

Few organisations, however, realise that simply urging employees to comply with such a requirement is not enough and that organisational practices must encourage the required mental approach. One company that has taken the extra step is Western Mining Corporation (WMC). It has a strategy similar to Esso's, called "take time, take charge", that aims to get people to stop and think and then take some appropriate action. What makes this happen is that supervisors are required to ask workers each day to tell them of instances where the have taken time and taken charge. What makes *this* happen is that, at weekly meetings with managers, supervisors are asked to provide examples of take-time-take-charge that have been reported to them. There is also feedback to original reporters in cases which are judged to be of significance. WMC has an employee at the corporate level whose full-time job is to supervise the whole process (WMC has about 4000 employees), a clear indication of the company's commitment to make this set of practices work.

Let us remain with WMC's approach for the moment and analyse it a little more detail. First, it is behaviour modification, but with a difference. The desired behaviour is not conformity with any specific safety requirement. Rather the behaviour of front line employees is to be changed in such a way as to make them more risk-aware. What is required is that they undertake a process. The outcome of the process is not predetermined and it is not possible to assess conformity with this requirement by direct observation. Instead, conformity is monitored, and encouraged, by asking employees to describe the process they have undertaken and the risk controls which they have identified as being necessary. Furthermore, the behaviour of managers and supervisors is integral to the process. Their behaviour of asking and telling is crucial to the success of this strategy and, interestingly, this behaviour is more directly observable than that of front line employees. From a behaviour change perspective, then, it is the behaviour of supervisors and managers which is the immediate target of change.

Second, precisely because this is about changing practices within an organization, it amounts to culture change. But because the focus is on individual practices, this will not by itself result in the full culture of safety envisaged by Reason. On the other hand promoting risk-awareness is a strategy which goes beyond rule-compliance and in so doing it promises to overcome some of the limitations of strategies which seek merely to develop cultures of compliance.

Third, risk-awareness is synonymous with mindfulness at the level of the individual. While this is certainly one of the aims of a mindful organisation, it cannot be equated with organisational mindfulness. Indeed, unless it is part of a strategy to develop organisational mindfulness it is unlikely to succeed. As employees become more risk-aware they are more likely to report matters of concern and more likely to make suggestions for safety improvements. If the organisation is one which discourages reporting and fails to act on information and suggestions coming from its workforce,

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[42] Consultancy work by the author. Another example of this approach is the West Australian government's program, "Thinksafe SAM". (SAM is short for: Spot the hazard, Assess the risk, Make the change).

employees will quickly become disillusioned. The strategy will then be viewed as an attempt to transfer responsibility for safety from the employer to the employee and to blame workers for being insufficiently risk-aware when things for wrong. If, on the other hand, the strategy of promoting risk-awareness among employees goes hand in hand with a commitment to mindfulness as an organisational phenomenon, reliable and safe functioning becomes a real possibility.

CONCLUSION

Safety culture is an attractive idea because if promises a way to overcome the limitations of safety systems. It is not, however, a straight-forward idea. Many of those who refer to safety culture have in mind an organisation whose members are all individually safety conscious. Reason, on the other hand, while acknowledging that safety culture has implications for the behaviour of individuals, insists that the concept be used to describe truly organisational phenomena and not simply the aggregated behaviour of individuals. In so doing he resists the slide towards individualism.

I have argued here that organisational mindfulness, though apparently a distinct and novel concept, is closely related to Reason's culture of safety. In many respects it is no more than a restatement of his ideas in new language. It exhibits the same creative tension in that it refers to truly organisational phenomena which nevertheless have implications at the level of individual consciousness. Its full potential, however, depends of maintaining its emphasis on organisational characteristics.

Safe behaviour strategies are aimed at culture change. But here the emphasis is unambiguously at the level of individuals and what they do, and the link to the organisational level inherent in the previous strategies is largely missing. Safe behaviour strategies in general aim to transform the behaviour of collections of individuals by creating a culture of compliance with rules and procedures. Only when applied to the behaviour of managers is there a potential for changing organisational practices.

The strategy of promoting risk-awareness among employees is a behaviour-based strategy which transcends other safe behaviour strategies in that it attempts to inculcate individual mindfulness directly. Although a promising development, it is unlikely to succeed unless it is part of a broader strategy of promoting organisational mindfulness or a culture of safety as described by Reason.

Reason's work is clearly pivotal in these developments. It insists on the truly organisational nature of the concept of safety culture and it provides a touchstone against which a variety of related concepts can usefully be evaluated.